

IN THE CLAIMS

1-41 (Canceled)

42. (Previously Presented) An isolated or purified nucleic acid encoding a polypeptide having the amino acid sequence of SEQ ID NO:4, said amino acid sequence comprising at least one immunogenic epitope.

43. (Currently Amended) The nucleic acid of claim 42 or 87, wherein said nucleic acid comprises nucleotides 13-1314 of SEQ ID NO:3.

44. (Currently Amended) The nucleic acid of claim 42 or 87, wherein said nucleic acid is an isolated nucleic acid.

45. (Currently Amended) The nucleic acid of claim 42 or 87, further comprising an expression control sequence operably linked to said nucleotide sequence.

46. (Previously Presented) The nucleic acid of claim 45, wherein said expression control sequence comprises a promoter.

47. (Previously Presented) The nucleic acid of claim 45, wherein said expression control sequence comprises an enhancer.

48. (Currently amended) A method of preparing a polypeptide comprising a carboxy-terminal portion of the heavy chain of botulinum neurotoxin serotype A comprising at least one immunogenic epitope, comprising:

transfecting a host cell with a nucleic acid encoding a polypeptide having the amino acid sequence of SEQ ID NO:4, said amino acid sequence comprising at least one immunogenic epitope; and

culturing the transfected host cell under conditions wherein the nucleic acid is expressed and wherein the polypeptide is produced from the nucleic acid,

wherein the host cell is selected from the group consisting of a gram negative bacteria, a yeast, and a mammalian cell.

49. (Currently Amended) The method of claim 48 or 88, further comprising recovering from said transfected host cell at least one ~~insoluble~~ polypeptide having the amino acid sequence of SEQ ID NO:4, said amino acid sequence comprising at least one immunogenic epitope.

50. (Currently Amended) The method of claim 48 or 88, wherein said host cell ~~organism~~ is *Escherichia coli*.

51. (Currently Amended) The method of claim 48 or 88, wherein said host cell ~~organism~~ is *Pichia pastoris*.

52. (Canceled)

53. (Currently amended) A method of isolating an immunogenic polypeptide having the amino acid sequence of SEQ ID NO:4, said amino acid sequence comprising at least one immunogenic epitope, comprising:

culturing a host cell transfected with an expression vector comprising a nucleic acid encoding a polypeptide having the amino acid sequence of SEQ ID NO:4, said amino acid sequence comprising at least one immunogenic epitope, under conditions wherein the nucleic acid is expressed and wherein the polypeptide is produced from the nucleic acid; and

isolating from said transfected host cell at least one ~~insoluble~~ polypeptide comprising the amino acid sequence of SEQ ID NO:4, said amino acid sequence comprising at least one immunogenic epitope,

wherein the host cell is selected from the group consisting of a gram negative bacteria, a yeast, and a mammalian cell, and wherein the recovered polypeptide is immunogenic.

54. (Canceled)

55. (Currently Amended) The nucleic acid of claim ~~claim~~ 42 or 87, wherein said nucleic acid has an overall ~~the~~ AT content is of less than ~~about~~ 70% of the total base composition.

56. (Currently Amended) The nucleic acid of claim 55, wherein ~~the~~ said nucleic acid has an overall AT content is of less than about 60% of the total base composition.

57-81 (Canceled)

82. (Previously Presented) A recombinant host cell comprising the nucleic acid of claim 45.

83-84. (Canceled)

85. (Currently Amended) The recombinant host cell of claim 82, wherein the host cell expresses the nucleic acid and wherein a polypeptide having the amino acid sequence of SEQ ID NO:4 is expressed, wherein said polypeptide is at least 0.75% (w/w) of the total cellular protein.

86. (Previously Presented) The recombinant host cell of claim 85, wherein said polypeptide is at least 20% (w/w) of the total cellular protein.

87. (Newly Added) An isolated or purified nucleic acid comprising the nucleic acid sequence of SEQ ID NO:3.

88. (Newly Added) A method of preparing a polypeptide comprising a carboxy-terminal portion of the heavy chain of botulinum neurotoxin serotype A, comprising:

transfecting a host cell with a nucleic acid having the nucleic acid sequence of SEQ ID NO:3,

culturing the transfected host cell under conditions wherein the nucleic acid is expressed and wherein a polypeptide is produced from the nucleic acid,

wherein the host cell is selected from the group consisting of a gram negative bacteria, a yeast, and a mammalian cell.

89. (Newly Added) The method of claim 48 or 88, further comprising recovering from the transfected host cell at least one polypeptide having the amino acid sequence of SEQ ID NO:4, wherein said polypeptide is an insoluble polypeptide.

90. (Newly Added) The method of claim 49, wherein said recovered polypeptide is an insoluble polypeptide.

91. (Newly Added) A method of isolating an immunogenic polypeptide having the amino acid sequence of SEQ ID NO:4, comprising:

culturing a host cell transfected with an expression vector comprising a nucleic acid having the sequence of SEQ ID NO:3 under conditions wherein the nucleic acid is expressed and wherein the polypeptide is produced from the nucleic acid; and

isolating from said transfected host cell at least one polypeptide comprising the amino acid sequence of SEQ ID NO:4,

wherein said host cell is selected from the group consisting of a gram negative bacteria, a yeast and a mammalian cell, and wherein said isolated polypeptide is immunogenic.

92. (Newly Added) The method of claim 53 or 91, wherein said polypeptide is an insoluble polypeptide.